

1013

# THE JOURNAL OF GENERAL MICROBIOLOGY

EDITED FOR  
THE SOCIETY FOR GENERAL MICROBIOLOGY

*Editors*

J. R. POSTGATE  
E. A. DAWES      S. W. GLOVER      M. F. MADELIN

*Editorial Board*

B. A. BRIDGES	A. J. HOLDING	J. A. ROPER
R. J. W. BYRDE	R. KNOX	A. H. ROSE
M. J. CARLILE	S. P. LAPAGE	J. G. SCAIFE
J. F. COLLINS	J. W. LIGHTBOWN	J. M. SHEWAN
S. T. COWAN	P. MEADOW	D. A. SMITH
T. CROSS	E. O. MORRIS	I. W. SUTHERLAND
N. DATTA	I. MORRIS	D. W. TEMPEST
T. H. FLEWETT	J. G. MORRIS	A. P. J. TRINCI
J. L. GAY	M. O. MOSS	K. VICKERMAN
N. G. HEATLEY	J. H. PEARCE	P. J. WHITE
M. T. HEYDEMAN	C. RATLEDGE	R. WHITTENBURY
P. N. HOBSON	M. H. RICHMOND	K. S. ZINNEMANN
	C. F. ROBERTS	

VOLUME 66, 1971

CAMBRIDGE  
AT THE UNIVERSITY PRESS  
1971

PUBLISHED BY THE CAMBRIDGE UNIVERSITY PRESS

Bentley House, 200 Euston Road, London, NW1 2DB

American Branch: 32 East 57th Street, New York, N.Y. 10022

*Printed in Great Britain at the University Printing House, Cambridge*

## Contents

### Part I issued April 1971

	PAGE
Ultrastructural Changes during Sporulation of <i>Clostridium pasteurianum</i> . By B. M. MACKAY and J. G. MORRIS . . . . .	I
Light and Electron Microscopic Studies of Crozier Development in <i>Pyronema domesticum</i> . By C.-Y. HUNG and K. WELLS . . . . .	15
Studies on a Radio-resistant Coccus Isolated from Bombay Duck ( <i>Harpodon nehereus</i> ). By N. F. LEWIS . . . . .	29
A New Factor Stimulating Invertase Production by <i>Saccharomyces fragilis</i> . By R. DAVIES . . . . .	37
Mycoplasma-like Organisms Associated with Chat Fruit and Rubbery Wood Diseases of Apple, <i>Malus domestica</i> Borkh., Compared with Those in Strawberry with Green Petal Disease. By A. B. BEAKBANE, M. D. MISHRA, A. F. POSNETTE and C. H. W. SLATER . . . . .	55
Haploidization Analysis in <i>Penicillium chrysogenum</i> . By C. BALL . . . . .	63
Accumulation of Iron-binding Phenolic Acids by Actinomycetales and Other Organisms Related to the Mycobacteria. By C. RATLEDGE and M. A. CHAUDHRY . . . . .	71
The Effect of Benomyl on the Fine Structure of <i>Botrytis fabae</i> . By D. V. RICHMOND and R. J. PRING . . . . .	79
Continuous Monoxenic Culture of <i>Tetrahymena pyriformis</i> . By C. R. CURDS and A. COCKBURN . . . . .	95
Relative Efficiency of Pure Cultures of Different Species of Cellulolytic Rumen Bacteria in Solubilizing Cellulose <i>in vitro</i> . By N. O. VAN GYLSWYK and J. P. L. LABUSCHAGNE . . . . .	109
A Procedure for Selecting and Isolating Specific Auxotrophic Mutants of <i>Mycobacterium smegmatis</i> . By K. T. HOLLAND and C. RATLEDGE . . . . .	115

#### SHORT COMMUNICATIONS

Counting and Sizing of the Individual Cells of Chain-forming <i>Streptococcus thermophilus</i> with an Electric Particle Counter. By J. HEINONEN . . . . .	119
A New, Mushroom-shaped Budding Bacterium. By R. WHITTENBURY and J. M. NICOLL . . . . .	123



## Part 2 issued May 1971

	PAGE
Studies on the Physiology of Heterocyst Production in the Nitrogen-fixing Blue-green Alga <i>Anabaena</i> sp. L-31 in Continuous Culture. By J. THOMAS and K. A. V. DAVID . . . . .	127
Thermal Lysis of Bacterial Membranes and Its Prevention by Polyamines. By P. H. RAY and T. D. BROCK . . . . .	133
Growth Measurements on Surface Colonies of Bacteria. By S. A. PALUMBO, M. G. JOHNSON, V. T. RIECK and L. D. WITTER . . . . .	137
Alteration of Fungal Morphology Induced by a Substance from <i>Bacillus cereus</i> . By Y. KOLTIN and I. CHORIN-KIRSCH . . . . .	145
Mapping the $\delta$ -Aminolaevulinic Acid Synthetase Locus in <i>Bacillus subtilis</i> . By I. KISS, I. BEREK and G. IVÁNOVICS . . . . .	153
Diaminopimelic Acid and Lysine Auxotrophs of <i>Pseudomonas aeruginosa</i> 8602. By C. E. CLARKSON and P. M. MEADOW . . . . .	161
The Zoospore of Allomyces. By M. S. FULLER and L. W. OLSON . . . . .	171
The Effect of Nickel on a Marine Bacterium: Fine Structure of <i>Arthrobacter marinus</i> . By A. B. COBET, G. E. JONES, J. ALBRIGHT, H. SIMON and C. WIRSEN . . . . .	185
Effect of Dissolved Oxygen on Growth Yield and Aldolase Activity in Chemostat Culture of <i>Azotobacter vinelandii</i> . By S. NAGAI, Y. NISHIZAWA, M. ONODERA and S. AIBA . . . . .	197
Increased Resistance to Several Antibiotics by One Mutation in an R-factor, R 1a. By K. NORDSTRÖM . . . . .	205
Genetic Transformation in <i>Proteus mirabilis</i> . By A. J. VAN RENSBURG . . . . .	215
Amino Sugars in the Cell Walls of <i>Pseudomonas</i> Species. By S. G. WILKINSON and K. A. CARBY . . . . .	221
Red Cell-sensitizing Antigens of Lactobacilli. By M. McLoughlin and F. S. STEWART . . . . .	229

## SHORT COMMUNICATIONS

Fatty Acid Nature and Adjuvant Activity of Wax D from <i>Mycobacterium tuberculosis</i> . By I. J. HIU and J. L. AMIEL . . . . .	239
Chloride Uptake by Mycelium of <i>Neocosmospora vasinfecta</i> and Its Inhibition by Glucose. By A. G. MILLER and K. BUDD . . . . .	243
Excystment of the Amoeba <i>Hartmannella castellanii</i> . By M. P. STRATFORD and A. J. GRIFFITHS . . . . .	247
Electrophoretic Protein Spectra of Wild-type and Isogenic Monokaryons of <i>Coprinus lagopus</i> . By R. SMYTHE and G. E. ANDERSON . . . . .	251

## Part 3 issued June 1971

	PAGE
A Co-operative Numerical Analysis of Scotochromogenic Slowly Growing Mycobacteria. By L. G. WAYNE, T. M. DIETZ, C. GERNEZ-RIEUX, P. A. JENKINS, W. KÄPPLER, G. P. KUBICA, J. B. G. KWAPINSKI, G. MEISSNER, S. R. PATTYN, E. H. RUNYON, K. H. SCHRÖDER, V. A. SILCOX, A. TACQUET, M. TSUKAMURA and E. WOLINSKY . . . . .	255
Septal Structure and Mating Behaviour of Common <i>A</i> Diploid Strains of <i>Coprinus lagopus</i> . By L. A. CASSELTON, D. LEWIS and R. MARCHANT . . . . .	273
Numerical Classification of the Tribe Klebsielleae. By S. BASCOMB, S. P. LAPAGE, W. R. WILLCOX and M. A. CURTIS . . . . .	279
The Chemistry of the Cell Walls of <i>rod</i> Mutants of <i>Bacillus subtilis</i> . By H. J. ROGERS, M. MCCONNELL and R. C. HUGHES . . . . .	297
Non-symbiotic Nitrogen-fixing Organisms from Some New Zealand Tussock-grassland Soils. By M. A. LINE and M. W. LOUTIT . . . . .	309
Macromolecular Composition and Nuclear Division During Spore Germination in <i>Aspergillus nidulans</i> . By B. W. BAINBRIDGE . . . . .	319
<i>Thermoactinomyces sacchari</i> sp.nov., a Thermophilic Actinomycete Causing Bagassosis. By J. LACEY . . . . .	327
The Utilization and Translocation by Micro-organisms of Carbon-14 Derived from the Decomposition of Plant Residues in Soil. By E. GROSSBARD . . . . .	339
Deoxyribonucleic Acid Base Composition and Numerical Taxonomy of Yeasts in the Genus <i>Trichosporon</i> . By P. F. DUPONT and L. R. HEDRICK . . . . .	349
Factors Affecting the Level and Activity of Pyruvate Kinase from <i>Coprinus lagopus sensu</i> Buller. By G. R. STEWART and D. MOORE . . . . .	361

## SHORT COMMUNICATIONS

A Comparison of Methods for the Detection of Phenylalanine Deamination by <i>Moraxella</i> Species. By J. J. S. SNELL and P. DAVEY . . . . .	371
Occurrence of a 5,7-Diene Sterol in <i>Leishmania donovani</i> . By S. S. KUWAHARA, L. J. PINTO and B. H. KAZAN . . . . .	375
Effects of Ethionamide and Isoxyl on Mycolic Acid Synthesis in <i>Mycobacterium tuberculosis</i> BCG. By F. G. WINDER, P. B. COLLINS and D. WHELAN . . . . .	379
Books Received . . . . .	381
Proceedings of the London Meeting of the Society on 5, 6 and 7 April 1971 . . . . .	i

